


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P-INCI-X-04-0270		FOR FURTHER ACTION		See Form PCT/PEA416
International application No. PCT/EP2004/008507		International filing date (day/month/year) 29.07.2004		Priority date (day/month/year) 30.07.2003
International Patent Classification (IPC) or national classification and IPC C07D413/04, A61K31/535, A61P25/00				
Applicant LABORATORIOS DEL DR. ESTEVE S.A. et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 1-84 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 28.02.2005		Date of completion of this report 15.12.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Deutsch, W Telephone No. +49 89 2399-8281		



INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITYInternational application No.
PCT/EP2004/008507

Box No. I Basis of the report

IAP20 Rev'd PCT/PTO 30 JAN 2006

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-260 as originally filed

Claims, Numbers

1-66 filed with telefax on 30.05.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-81
	No: Claims	
Inventive step (IS)	Yes: Claims	1-81
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-81
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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REPORT ON PATENTABILITY
(SEPARATE SHEET)**

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Re Item V.

1 The following document is referred to in this communication:

- D1: US-A-5 665 719 (PETTIBONE DOUGLAS J ET AL) 9 September 1997 (1997-09-09)
D2: WO 01/85725 A (FEENSTRA ROELOF W ; LONG STEPHEN K (NL); HEIJDEN JOHANNES A M V D (NL)) 15 November 2001 (2001-11-15)
D3: WO 97/45419 A (WARNER LAMBERT CO ; WISE LAWRENCE DAVID (US); WUSTROW DAVID JUERGEN (U) 4 December 1997 (1997-12-04)
D4: US-B-6 225 3121 (KRUSE CORNELIS GERRIT ET AL) 1 May 2001 (2001-05-01)
D5: EP-A-1 242 396 (ASTRAZENECA AB) 25 September 2002 (2002-09-25)

Novelty

The compounds of the present claim 1, 42 differ from those of the amended claims through the possible substituents of the aliphatic group in the definition of W, Wb.

The subject matter of the present claim 1 and 42 is regarded as a novel selection from the general disclosures of D1.

The compounds of the present claims differ those of D2 to D5 through the presence of the SO₂ moiety at the 1 position of the piperidine ring.

The "subsequent medical use claim 21" is novel vis-avis D1 through the pathological conditions listed

Inventive Step

The closest prior art is considered to be D4, since this discloses benzoxazinone compounds, which may be substituted inter alia by piperidine moieties and which are indicated as being active as 5-HT_{1A} receptors.

The problem underlying the present application is the provision of compounds which are

useful in the treatment of certain disorders related to 5HT₆ receptor regulation.

The skilled person could not have arrived at the claimed subject matter from D4 in view of the structural differences between the claimed compounds and those of D4 (cf point of attachment of piperidine to the nitrogen of the benzoxazine ring and presence of the SO₂ group).

An inventive step can therefore be acknowledged

VII.

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 to D5 is not mentioned in the description, nor are these documents identified therein.

VIII

The term "preferably" used in the claims has no limiting effects on the claims.

The description is not adapted to the present claims.

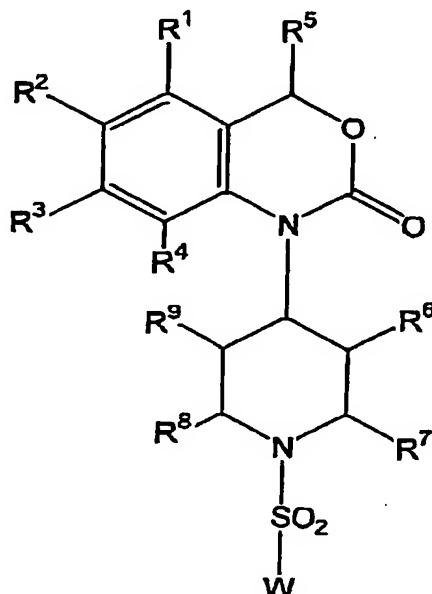
The reasons for the provisos in the present claim 1 are at present unclear, and it may be necessary for the Applicant to explain these at the regional stage of examination.

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Amended Claims:

1. Benzoxazinone-derived sulfonamide compounds of general formula (I)



(I),

wherein

R¹, R², R³, R⁴ are each independently selected from the group consisting of hydrogen, halogen, an unbranched or branched, saturated or unsaturated, optionally at least mono-substituted aliphatic radical, a saturated or unsaturated, optionally at least mono-substituted, optionally at least one heteroatom as ring member containing cycloaliphatic radical, which may be bonded via an optionally at least mono-substituted alkylene group and/or may be condensed with an optionally at least mono-substituted mono- or polycyclic ring-system, an optionally at least mono-substituted aryl- or heteroaryl radical, which may be bonded via an optionally at least mono-substituted alkylene group and/or may be condensed with an optionally at least mono-substituted mono- or polycyclic ringsystem, a nitro group, a cyano group, -OR¹⁰, -OC(=O)R¹¹, -(C=O)-OR¹¹, -SR¹², -SOR¹², -SO₂R¹², -NH-SO₂R¹², -SO₂NH₂ and a -NR¹³R¹⁴ moiety,

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R^5 represents hydrogen, an unbranched or branched, saturated or unsaturated, optionally at least mono-substituted aliphatic radical or a saturated or unsaturated, optionally at least mono-substituted, optionally at least one heteroatom as ring member containing cycloaliphatic radical,

R^6 , R^7 , R^8 , R^9 are each independently selected from the group consisting of hydrogen, an unbranched or branched, saturated or unsaturated, optionally at least mono-substituted aliphatic radical, a saturated or unsaturated, optionally at least mono-substituted, optionally at least one heteroatom as ring member containing cycloaliphatic radical, a cyano group and a $-COOR^{15}$ moiety,

W represents an unbranched or branched, saturated or unsaturated aliphatic radical, which may be substituted by one or more substituents selected from the group consisting of hydroxy, halogen, branched or unbranched C_{1-4} -alkoxy, branched or unbranched C_{1-4} -perfluoroalkoxy, branched or unbranched C_{1-4} -perfluoroalkyl, amino, carboxy, amido, cyano, nitro, $-SO_2NH_2$, $-CO-C_{1-4}$ -alkyl, $-SO-C_{1-4}$ -alkyl, $-SO_2-C_{1-4}$ -alkyl, $-NH-SO_2-C_{1-4}$ -alkyl, wherein the C_{1-4} -alkyl may in each case be branched or unbranched, an unsubstituted or at least mono-substituted phenyl or naphthyl radical and an unsubstituted or at least mono-substituted furanyl, thienyl, pyrrolyl, imidazolyl, pyrazolyl, pyridinyl, pyrimidinyl, quinoliny and isoquinoliny radical, whereby said substituents may be at least mono-substituted with F, Cl, methyl and methoxy,

a saturated or unsaturated, optionally at least one heteroatom as ring member containing cycloaliphatic radical, whereby said cycloaliphatic radical may be substituted by one or more substituents selected from the group consisting of hydroxy, nitro, carboxy, cyano, keto, halogen, C_{1-20} -alkyl, partially fluorinated C_{1-4} alkyl, partially chlorinated C_{1-4} alkyl, partially brominated C_{1-4} alkyl, C_{1-5} -alkoxy, partially fluorinated C_{1-4} alkoxy, partially chlorinated C_{1-4} alkoxy, partially brominated C_{1-4} alkoxy, C_{2-6} -alkenyl, SO_2-C_{1-4} -alkyl, $-(C=O)-C_{1-5}$ -alkyl, $-(C=O)-O-C_{1-5}$ -alkyl, $-(C=O)-Cl$, $-S-C_{1-4}$ -alkyl-, $-(C=O)-H$, $-NH(C=O)-NH-C_{1-5}$ -alkyl, $-(C=O)-C_{1-4}$ -perfluoroalkyl, $-NR^A R^B$, wherein R^A and R^B are independently selected from the group consisting of H, C_{1-4} -alkyl and phenyl,